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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/035,365	12/28/2001	Gary E. Horst	EMER2614	2311

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EXAMINER

NGUYEN, TRAN N

ART UNIT

PAPER NUMBER

2834

DATE MAILED: 03/12/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/035,365

Applicant(s)

HORST, GARY E.

Examiner

Tran N. Nguyen

Art Unit

2834

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☐ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. **Claims 10-18** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In **claim 10**, "the second plurality of stator teeth each having no permanent magnets located at least partly therein" is indefinite because it is unclear whether (1) there is completely no permanent magnet located in the second stator teeth or (2) there are permanent magnets located at the stator teeth, but no magnet located at least partly, but rather the magnet located entirely within the stator teeth. In light of the spec, the above is understood, as there is completely no permanent magnet located in the second stator teeth.

In **claim 7**, the recitation adds the limitations of a rotor. This is indefinite because the independent claim recites a stator structure begun with the phrase "a stator structure comprising". As known in the art, a stator structure could not comprise a rotor structure, but rather a motor/generator or generally a dynamoelectric machine comprises both a stator and a rotor as two essential components of the machine.

In **claim 17**, "second profile's end regions taper inward" should be "first profile's end regions" because the first profile stator teeth having PMs embedded; therefore, they need the taper (see fig 11 and spec p. 11)

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless —

- (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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2. **Claims 1-4 and 8** are rejected under 35 U.S.C. 102(b) as being fully anticipated by Nashiki (US 6081083).

Nashiki discloses a stator (fig 9) for use in a permanent magnet machine, the stator comprising: a frame (1) having an outer peripheral edge and an inner peripheral edge extending about a central axis; a plurality of stator teeth (20) extending from the frame's inner peripheral edge toward the central axis; and a plurality of permanent magnets (PMs) (22), each located entirely within the stator teeth and each of the stator teeth having one of the PMs located entirely therein; and, wherein the PMs and the stator teeth each have a width extending in a direction of rotation of a rotor and the width of the permanent magnets are greater than the width of the stator teeth; Nashiki also shows that the PMs are arranged in alternate polarities.

3. **Claims 1-4, 8** are rejected under 35 U.S.C. 102(b) as being fully anticipated by Herron (US 3671787).

Herron discloses a stator (figs 1-3) for use in a permanent magnet machine, the stator comprising: a frame having an outer peripheral edge and an inner peripheral edge extending about a central axis; a plurality of stator teeth (41) extending from the frame's inner peripheral edge toward the central axis; and a plurality of permanent magnets (PMs) (18-21), each located entirely within the stator teeth and each of the stator teeth having one of the PMs located entirely therein; the PMs are arranged in alternate polarities.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. **Claims 1-3 and 8** are rejected under 35 U.S.C. 102(e) as being fully anticipated by Shibayama et al (US 6262508).

Shibayama discloses a stator (fig 4) for use in a permanent magnet machine, the stator comprising: a frame (11) having an outer peripheral edge and an inner peripheral edge extending about a central axis; a plurality of stator teeth extending from the frame's inner peripheral edge toward the central axis; and a plurality of permanent magnets (PMs) (15), each located entirely within the stator teeth and each of the stator teeth having one of the PMs located entirely therein; and the PMs are arranged in the same polarities (col 4 lines 40-43).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. **Claims 5-7 and 9** are rejected under 35 U.S.C. 103(a) as being unpatentable over Nashiki, alternately Shibayama, as applied in the rejections against the base claim, and in view of Torok (US 5117144).

Nashiki discloses the claimed invention, except for the added limitations of the following:

- (a) only every other one of the stator teeth have one of the permanent magnets located therein;
- (b) the stator includes twelve stator teeth, and wherein the rotor includes eight rotor teeth.
- (c) the PMs having inwardly facing north poles.

Regarding the limitations of subsection (a), Torok teaches a stator having a plurality of stator teeth (3, 4), wherein only every other one (3) of the stator teeth have one of the permanent magnets. This configuration of stator would enable the supply of power thereto to be controllable electronically.

Thus, it would have been obvious to one skilled in the art at the time the invention was made to modify the Nashiki stator by embodying the stator with only every other one of the stator teeth have one of the permanent magnets located therein. Doing so would enable the control of the supply of power thereto.

Regarding the limitations of subsection (b), Torok teaches that the stator with PMs and magnetic teeth and the rotor with rotor teeth can have any desired even number of respective rotor teeth and stator teeth (col 4 lines 15+). Furthermore, has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

Thus, it would have been obvious to one skilled in the art at the time the invention was made to modify the Nashiki stator by embodying the machine with the stator includes twelve stator teeth, and wherein the rotor includes eight rotor teeth because the number of poles of respective stator and rotor would enable the machine to yield a preferable output. Doing so would involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

Regarding the limitations of subsection (c), Shibayama teaches that the PMs are arranged in the same polarities (col 4 lines 40-43). Those skilled in the art would understand that, by applying the Shibayama's teaching and depending on the magnetic pole of the rotor, an artisan can arrange the stator with the PMs having uniform polarity of the magnets in either north or south pole facing inwardly.

Thus, it would have been obvious to one skilled in the art at the time the invention was made to modify the stator having PMs being arranged with north pole facing inwardly so that the stator's PMs are in radial polarity alignment to interact with the rotor magnetic poles. Doing so would require only the necessary mechanical skill to make simple reversals of positions of mechanical parts, it has been held that rearranging parts of an invention involves only routine skill in the art. *In re Japikse*, 86 USPQ 70.

6. **Claims 10-14, 16, 18-20** are rejected under 35 U.S.C. 103(a) as being unpatentable over Torok in view of Shibayama.

Torok substantially discloses the claimed invention, except for the following limitations:

- (a) the PMs are located at least partial in the stator teeth, as recited in claim 1, and particularly the PMs located entirely within the stator teeth, as in claim 11;
- (b) the PMs having inwardly facing north poles;
- (c) the stator has 12 stator teeth and the rotor having 8 rotor teeth.

Regarding the limitations of subsections (a), Shibayama, however, teaches these features (Figs 9). Shibayama teaches that the magnet placement design of the prevent invention enables the utilization of the magnetic fluxes offered by the magnets much more effectively, compared with the design of placing the magnets at the inner opening side of the slots in the stator teeth. Also, because the magnets are contained inside the closed-inserted holes and embedded within the stator, eddy currents are largely prevented from affecting the magnets so as to prevent heating of the magnets during operation of the motor.

Thus, it would have been obvious to one skilled in the art at the time the invention was made to modify the stator having PMs being embedded within the stator teeth, as taught by Shibayama. Doing so would enhance the magnetic flux effect and reduce eddy currents therein.

Regarding the limitations of subsections (b), Shibayama teaches that the PMs are arranged in the same polarities (col 4 lines 40-43). Those skilled in the art would understand that, by applying the Shibayama's teaching and depending on the magnetic pole of the rotor, an artisan can arrange the stator with the PMs having uniform polarity of the magnets in either north or south pole facing inwardly.

Thus, it would have been obvious to one skilled in the art at the time the invention was made to modify the stator having PMs being arranged with north pole facing inwardly so that the stator's PMs are in radial polarity alignment to interact with the rotor magnetic poles. Doing so would require only the necessary mechanical skill to make simple reversals of positions of mechanical parts, it has been held that rearranging parts of an invention involves only routine skill in the art. *In re Japikse*, 86 USPQ 70.

Regarding the limitations of subsection (c), Torok teaches that the stator with PMs and magnetic teeth and the rotor with rotor teeth can have any desired even number of respective rotor teeth and stator teeth (col 4 lines 15+). Furthermore, has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller, 105 USPQ 233*.

Thus, it would have been obvious to one skilled in the art at the time the invention was made to modify the Nashiki stator by embodying the machine with the stator includes twelve stator teeth, and wherein the rotor includes eight rotor teeth because the number of poles of respective stator and rotor would enable the machine to yield a preferable output. Doing so would involve only routine skill in the art. *In re Aller, 105 USPQ 233*.

7. **Claim 15** is rejected under 35 U.S.C. 103(a) as being unpatentable over Torok and Shibayama, and further in view of Nashiki.

The combination of Torok and Shibayama refs discloses the claimed invention, except for the width of the PMs is greater than that of the stator teeth.

Nashiki, however, teaches this feature (fig 9). Those skilled in the art would realize that the greater width of the PMs would increase the magnetic flux flow, consequently a significant enhancement in the magnetic field between the rotor and the stator.

Thus, it would have been obvious to one skilled in the art at the time the invention was made to modify the stator by embodying the PMs with greater width than that of the stator teeth, as taught by Nashiki. Doing so would increase the magnetic flux flow, consequently a significant enhancement in the magnetic field between the rotor and the stator.

8. **Claim 17** is rejected under 35 U.S.C. 103(a) as being unpatentable over Torok and Shibayama, and further in view of Brammerio (US 4241274).

The combination of Torok and Shibayama refs discloses the claimed invention, except for the added limitations of the first group of stator teeth and second group of stator teeth having first and second respective profiles each include end regions facing the central axis, and wherein the

second profile's end regions taper inwardly towards said inner peripheral edge to a greater extent than the first profile's end regions.

Torok discloses the first and second groups of stator teeth having respective first and second profiles, which are different from one another, however, Torok does not disclose the aforementioned limitations.

Brammerio, however, teaches a stator having first and second groups of stator teeth having respective first profile and second profiles which are different from one another, wherein the second profile's end regions taper inwardly towards said inner peripheral edge to a greater extent than the first profile's end regions (fig 2) for improving the stator poles with optimized magnetic characteristics with respect to a preselected load at which the dynamoelectric machine is intended to be operated for maximized performance efficiency. Those skilled in the art would realize that the important teaching of Brammerio is that the stator teeth can be configured with different profiles in order to accommodate the winding, or in this case the PMs, in order to obtain the optimized magnetic characteristics thereof.

Thus, it would have been obvious to one skilled in the art at the time the invention was made to modify the stator by configuring the stator teeth with wherein the second profile's end regions taper inwardly towards said inner peripheral edge to a greater extent than the first profile's end regions. Doing so would enable to optimize the magnetic characteristics thereof.

Communication

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tran N Nguyen whose telephone number is (703) 308-1639. The examiner can normally be reached on M-F 6:00AM-2:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nestor Ramirez can be reached on (703)-308-1371. The fax phone numbers for the organization where this application or proceeding is assigned are (703)305-3431 for regular communications and (703)-395-3432 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)-308-1782.

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A handwritten signature in black ink, appearing to read 'Tran', with a long, sweeping horizontal line extending to the right.

TRAN NGUYEN

PRIMARY PATENT EXAMINER

TC-2800